DOCUMENT RESUME

ED 368 892 CE 066 072

AUTHOR	Kerka, Sandra
TITLE	Life and Work in a Technological Society. ERIC Digest No. 147.
INSTITUTION	ERIC Clearinghouse on Adult, Career, and Vocational Education, Columbus, Ohio.
SPONS AGENCY	Office of Educational Research and Improvement (ED), Washington, DC.
REPORT NO	EDO-CE-94-147
PUB DATE	94
CONTRACT	RR93002001
NOTE	4p.
PUB TYPE	Information Analyses - ERIC Clearinghouse Products (071)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Educational Needs; *Educational Objectives; Elementary Secondary Education; *Science and Society; Sociocultural Patterns; *Technological Advancement; *Technological Literacy; *Technology Education
IDENTIFIERS	ERIC Digests

ABSTRACT

Technology is more than applied science. It is the processes and processes by which humans have coped with and changed their environment throughout history. People have always lived and worked in a "technological society." Never before, however, has technological change been so rapid or broad in scope. The concept of an "educated person" includes an element of technological literacy, which is in turn a continuum on which individuals' levels of competence vary and degree of technological literacy needed depends on life and work roles. Increasing numbers of persons from demographic groups traditionally on the margins of technological experience are entering the work force at a time when the amount and breadth of technical training needed for many jobs has increased. Technology education is an important component of education that aims to prepare students for life and work in phases appropriate for different academic levels (ranging from awareness for elementary students to preparation for employment for high school and postsecondary students). A balanced curriculum recognizes the technological method as a mode of inquiry equal to those used in the sciences and humanities. Technology education is a problem-based method of inquiry; however, it should be balanced with ideas-based inquiry. (Contains 11 references.) (MN)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 368 892

Life and Work in Technological Society
ERIC Digest No. 147

Sandra Kerka

ERIC Clearinghouse on Adult, Career, and Vocational Education
Center on Education and Training for Employment
College of Education
The Ohio State University
1900 Kenny Road
Columbus, OH 43210-1090

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

BEST COPY AVAILABLE

CE066072

DIGEST
NO. 147

ERIC Clearinghouse on Adult, Career, and Vocational Education

Life and Work in a Technological Society

by Sandra Kerka

1994

EDO-CE-94-147

If we expect our graduates to contribute to the quality of life through their individual creative work in family, jobs and society, we need to recognize that all of us are involved in and interact with a highly technological environment, and that education should develop capability for lifelong learning in all of the disciplines which contribute to that environment. (Lisensky et al. 1985, p. 6)

Anyone who uses an automatic teller machine to get cash, watches a movie at home on videotape, or scans the want ads to see what skills employers are seeking is aware that technology pervades the way people live and work. Because technology is a social process, an important facet of technology education is creating awareness of its social context and implications. What is technology? Why should all citizens "acquire the knowledge and skills to be *both* intelligent consumers of technology and doers of technology" (Puk 1993, p. 29)? This ***ERIC Digest*** focuses on the sociocultural aspects of technology and the need to develop the knowledge and skills to cope with the technological environment.

What Is Technology?

Technology is not simply applied science. Despite the popular tendency to equate it with sophisticated machines such as magnetic resonance imaging or Patriot missiles, it is not an invention of the 20th century. Technology has existed throughout history as the processes and products by which humans have coped with and changed their environment. It can be considered the **tools** that extend human capabilities, the **systems** within which the tools are used, and an approach to the **management** of the environment (Lisensky et al. 1985). Technology is **object** (tools, machines), **process** (design and transformation of material), **knowledge** (know-how, technique), and **volition** (aims, intentions, and choices that link the other three) (Frey 1989). Musical instruments, pens, typewriters, and forks are as much technological artifacts as lasers and satellites.

Technology is "woven throughout the very fabric of our culture as an agent for social, economic, and cultural change" (Custer 1990, p. 53). It is the HOW that links WHAT IS (science, social science) to WHAT SHOULD BE (humanities, religion) (Lisensky et al. 1985). People have always lived and worked in a "technological society," and the adoption of new technologies is a recurring issue. What is different about today?—the pace of technological change, the scope of its effects (global and beyond), the complexity and interdependence of advanced technological subsystems, and technology's value and place within the culture. How does a technologically literate person view technology? As a controlled or controlling force? With uncritical enthusiasm and optimism as the solution to every problem, or with fear and suspicion as the end of civilization as we know it (Postman 1992)?

The Technologically Literate Person

The concept of an "educated person" includes an element of technological literacy:

- "Technology links to an Image of the Educated Person who strives to improve the human condition by creating new things or modifying existing things" (Puk 1993, p. 27).
- An educated person has knowledge, skill, and vision to deal with a complex world and the ability to anticipate and help shape the future (Lisensky et al. 1985).
- "The person who is not technologically literate, in our world, is not a fully educated person" (Hunter 1992, p. 26).

Must a person know how something works or is it enough to know how to work it? Are technologies becoming more complex or do innovations such as voice-activated systems require less understanding? Is it acceptable that people can function without knowing how to program their VCRs, or does lack of this skill waste time and resources and limit potential? Technological literacy is a continuum on which a person's level of competence varies, and the degree of literacy needed depends on different life and work roles. However, complex issues with which communities, neighborhoods, regions, and nations must deal surround technology's effects on a host of areas: family work and leisure patterns and structure, genetic engineering of foods, organ donation, toxic waste, air quality, alternative energy sources, contraception, increased life expectancy, and health care reform. Decisions about these issues should be shared by informed citizens and be based on a full spectrum of perspectives and values, not just those of the scientific and technical elite (Selby 1993).

The work force is composed in greater proportions of groups traditionally on the margins of technological experience (at least the technology valued in the marketplace, according to Selby 1993): females, people with disabilities, minorities, immigrants from less developed nations. At the same time, the amount and breadth of technical training needed for many jobs has increased (Pucel 1992). Many jobs depend on the skills of symbolic analysis—abstraction, system thinking, experimental inquiry, and collaboration. Acquiring these skills requires an interdisciplinary foundation of science, humanities, *and* technology. Other technological issues related to work include equity of access (e.g., do girls get equal time in acquiring computer, science, and math skills?) and "electronic cottages" (more job opportunities but greater potential for exploitation). On the other hand, the information age is changing the occupational structure to one based on mental, not physical, abilities. Will this lead to increased opportunities for women? (Cianni and Weitz 1986).

"Technology is bringing about unique alterations in the way people live and work. For many, it will serve to improve

dramatically the quality of life; for others, it will reinforce traditional barriers to advancement and may even create additional hindrances" (ibid., p. 503). Are satellites, cable television, and CD-ROM widening access or will commercializing communications networks narrow it? "To whom will technology give greater power and freedom? And whose power and freedom will be reduced by it?" (Postman 1992, p. 11).

Learning to Live and Work with Technology

"Technology is not just used, it is lived" (Hunter 1992, p. 26). The quality of that life has a great deal to do with the attitudes, values, and abilities with which people deal with technology. In both life and work, people need flexibility and the attitudes and skills of lifelong learning to cope with technological change. Both education and training are needed: a trained person has the skills with which to use, create, and adapt technology and an educated person has the commitment and point of view that give meaning to the practice of those skills. A balanced curriculum is neither obsessed with nor fearful or disdainful of technology. The Greeks (from whose word *techne'* technology is derived) recognized the danger of these two extremes. According to Byrum (1984), techne' originally meant the knowledge required to get the job done. Over time, ethical and aesthetic dimensions were added, integrating technical skills with the qualities needed to be a good citizen.

The study of technology converges with several current educational emphases: critical thinking, experiential and cooperative learning, accommodation of learning styles, theory/practice, abstract/applied knowledge, interdisciplinary approaches, integration of academic and vocational education, multicultural awareness, and ethics, responsibility, and values. Technology education is thus an important component of education that aims to prepare students for life and for work. Like career education, technology education has appropriate phases for each level: awareness for elementary students, exploration for middle school students, and preparation for employment for high school and postsecondary students.

A balanced curriculum recognizes the technological method as a mode of inquiry equal to those used in the sciences and humanities. At the heart of the technological method are humans confronted with problems, needs, or opportunities, who select and use appropriate technological processes to achieve meaningful outcomes (Pucel 1992). These outcomes have desirable or undesirable consequences and lead to further problems or opportunities, beginning a new cycle of problem solving.

Technology education is problem based, a method of inquiry that "must be an important component in the education of today's student because it is the dominant mode of inquiry for decision making in our time" (Lisensky et al. 1985, p. 27). However, it should be balanced with ideas-based inquiry, because it is important to know both *why* humans invent things as well as *how* (Postman 1992). When the study of technology gains equal respect with the sciences and humanities, it will benefit both college-bound and noncollege-bound students (Stone 1990).

In preparing students for life and work in a technological society the following should be considered:

- Selby (1993) warns against the myths that valued technologies have a masculine imprint and that males are innately better technologists than females. The technologies women have created throughout history should be studied, and girls must be persuaded that technology is not a "male" province.
- Cultural issues include respect for the technologies of other cultures, concern for increasing access to technology, and focus on sustainability and appropriate technology that is compatible with the values of other cultures.
- Ethics and values, forming convictions, and making life-style choices must be taught because of the social, cultural, and environmental impact of technological intervention.
- Because all teachers are potentially teachers of technology (Puk 1993), they should consider their role as change agents and recognize that the study of technology, like all education, is not disinterested or neutral. Ultimately, *humans* are the subjects of technology education.

References

Byrum, C. S. "The Greek Concept of 'Techne.'" 1984. (ED 251 394)

Cianni, M., and Weitz, A. D. "The Technological Society: Implications for Women in the Workplace. ***Journal of Counseling and Development*** 64, no. 8 (April 1986): 501-503. (EJ 337 171)

Custer, R. L. "Liberal Education and the Practical Arts." ***Journal of Industrial Teacher Education*** 27, no. 4 (Summer 1990): 46-55. (EJ 411 367)

Frey, R. "A Philosophical Framework for Understanding Technology." ***Journal of Industrial Teacher Education*** 27, no. 1 (Fall 1989): 23-35. (EJ 401 980)

Hunter, J. O. "Technological Literacy." ***Educational Technology*** 32, no. 3 (March 1992): 26-29. (EJ 441 825)

Lisensky, R. P.; Pfnister, A.; and Sweet, S. D. ***The New Liberal Learning: Technology and the Liberal Arts***. Washington, DC: Council of Independent Colleges, 1985. (ED 267 703)

Postman, N. ***Technopoly: The Surrender of Culture to Technology***. New York: Knopf, 1992.

Pucel, D. "Technology Education: Its Changing Role within General Education." Conference paper, 1992. (ED 353 400)

Puk, T. "The Acculturation of Technology Education." ***Technology Teacher*** 52, no. 7 (April 1993): 27-30. (EJ 460 706)

Selby, C. C. "Technology: From Myths to Realities." ***Phi Delta Kappan*** 74, no. 9 (May 1993): 684-689. (EJ 463 870)

Stone, R. D. "A Challenge: Education in the Twenty-First Century." ***Technology Teacher*** 49, no. 7 (April 1990): 11-15. (EJ 404 776)

Developed with funding from the Office of Educational Research and Improvement, U.S. Department of Education, under Contract No. RR93002001. Opinions expressed do not necessarily reflect the position or policies of OERI or the Department. ***Digests*** may be freely reproduced.

CENTER ON EDUCATION
AND TRAINING FOR EMPLOYMENT
COLLEGE OF EDUCATION
THE OHIO STATE UNIVERSITY
1900 Kenny Road • Columbus, Ohio 43210-1090